FORAGE SUITABILITY GROUP
Loam

FSG No.: G055CY100SD

Major Land Resource Area: 55C - Southern Black Glaciated Plains

Physiographic Features
Soils in this group typically occur on upland positions such as backslopes, footslopes, and toeslopes of glacial till and outwash plains and fans. Some occur on high flood plains and terraces along streams that flow through the glacial plains.

	Minimum	Maximum
Elevation (feet):	1300	1970
Slope (percent):	0	15
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Low	High

Climatic Features
This group occurs in a mid-continental climate characterized by wide seasonal temperature and precipitation fluctuations and extremes.

Annual precipitation varies widely from year to year in MLRA 55C. Average annual precipitation for all climate stations listed below is about 21 inches. About 75 percent of that occurs during the months of April through September. On average, there are about 28 days with greater than .1 inches of precipitation during the same timeframe. Annual precipitation and temperature increase from the north to the south in the MLRA. Precipitation is less than needed for optimum forage production and is the single largest factor limiting production from this group on non-irrigated lands.

Average annual snowfall ranges from 23 inches at Pickstown to 41 inches at Huron. Snow cover at depths greater than 1-inch range from 32 days at Howard to 72 days at Huron.

Average July temperatures are about 75^0F and average January temperatures are about 16^0F. Recorded temperature extremes in the MLRA during the years 1961 to 1990 are a low of -39 at both Mellette and Huron, and a high of 114 recorded at Mellette. The MLRA lies mostly in USDA Plant Hardiness Zones 4a and 4b, with a small area of warmer 5a along the Missouri River.

At Huron, the average annual wind speeds are about 11.5 mph. The highest wind speeds occur during March through May. It is cloudy about 154 days a year. Average morning relative humidity in June is about 86 percent and average afternoon humidity is 59 percent.

The climate data listed in the tables below represent high and low ranges and averages for the climate stations and dates listed. For additional climate data access the National Water and Climate Center at http://www.wcc.nrcs.usda.gov.

	From	To
Freeze-free period (28 deg)(days):	128	161
(9 years in 10 at least)		
Last Killing Freeze in Spring (28 deg):	May 19	May 07
Last Frost in Spring (32 deg):	May 31	May 18
(1 year in 10 later than)		
First Frost in Fall (32 deg):	Sep 08	Sep 23
(1 year in 10 earlier than)		
First Killing Freeze in Fall (28 deg):	Sep 16	Oct 04
(1 year in 10 earlier than)		
Length of Growing Season (32 deg)(days):	105	136
(9 years in 10 at least)		
Growing Degree Days (40 deg):	4360	5304
Growing Degree Days (50 deg):	2763	3192
Annual Minimum Temperature:	-30	-20
Mean annual precipitation (inches):	18	22

Monthly precipitation (inches) and temperature (F):

2 years in 10:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Precip. Less Than	0.12	0.18	0.36	0.85	1.28	1.35	1.40	0.94	0.52	0.43	0.18	0.20
Precip. More Than	0.93	1.28	2.56	3.74	5.15	5.28	4.68	3.53	4.20	2.68	1.90	1.38
Monthly Average:	0.44	0.61	1.48	2.32	3.11	3.56	2.72	2.27	2.10	1.47	0.80	0.56
Temp. Min.	-1.5	4.9	18.8	31.6	43.3	53.4	58.8	55.4	44.1	32.5	18.7	4.1
Temp. Max.	30.6	36.4	47.0	62.4	73.4	83.0	90.4	88.6	78.2	65.5	46.7	33.4
Temp. Avg.	15.8	21.8	33.4	47.8	59.3	69.0	75.2	72.9	62.3	50.2	33.9	17.7

Climate Station	**Location**	**From**	**To**
SD0043	Academy, SD	1961	1990
SD4037	Howard, SD	1961	1990
SD4127	Huron, SD	1961	1990
SD5456	Mellette, SD	1961	1990
SD5561	Miller, SD	1961	1990
SD6574	Pickstown, SD	1961	1990
SD7052	Redfield, SD	1961	1990
SD8767	Wagner, SD	1961	1990

Soil Interpretations

This group consists of very deep, moderately well and well drained, moderately coarse to moderately fine textured soils formed mostly from loess, glacial till, alluvium, and colluvium. Available water capacity is high and permeability is moderately slow to moderate.

Drainage Class:	Moderately well drained	To	Well drained
Permeability Class:	Moderately slow	To	Moderate
(0 - 40 inches)			
Frost Action Class:	Low	To	Moderate

	Minimum	**Maximum**
Depth:	72	
Surface Fragments >3" (% Cover):	0	3
Organic Matter (percent):	1.0	6.0
(surface layer)		
Electrical Conductivity (mmhos/cm):	0	4
(0 - 24 inches)		

	Minimum	Maximum
Sodium Absorption Ratio: (0 - 12 inches)	0	1
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	7.8
Available Water Capacity (inches): (0 - 60 inches)	9	
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	8

Adapted Species List

The following forage species are considered adapted to grow on the soils in this group. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of those species can be accessed at http://plants.usda.gov/.

Cool Season Grasses	
Altai wildrye	F
Canada wildrye	F
Crested wheatgrass	G
Green needlegrass	G
Intermediate wheatgrass	G
Meadow bromegrass	G
Newhy hybrid wheatgrass	G
Pubescent wheatgrass	G
Russian wildrye	G
Slender wheatgrass	G
Smooth bromegrass	G
Tall wheatgrass	G
Western wheatgrass	G

Warm Season Grasses	
Big bluestem	G
Indiangrass	G
Little bluestem	G
Prairie sandreed	F
Sand bluestem	F
Sideoats grama	G
Switchgrass	G

Legumes	
Alfalfa	G
Birdsfoot trefoil	F
Canada milkvetch	G
Cicer milkvetch	G
Purple prairieclover	G
Red clover	G
Sainfoin	F
Sweetclover	G
White prairieclover	G

G - Good adaptation for forage production on this group of soils in this MLRA
F - Fair adaptation but will not produce at its highest potential

Production Estimates

Production estimates listed here should only be used for making general management recommendations. Onsite production information should always be used for making detailed planning and management recommendations.

The high forage production estimates listed below are based on dense, vigorous stands of climatically adapted, superior performing cultivars. They are properly fertilized for high yields and pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. If grazed, optimum beginning and ending grazing heights are adhered to. Adequate time is allowed for plant recovery before entering winter dormancy under both uses.

The production estimates listed below represent total annual above ground plant production on an air-dry-matter basis. Estimates of hay and grazing yields can be calculated from these numbers by multiplying them by a harvest efficiency. A 70 percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency is highly dependent on the grazing management system applied, ranging from 25 to 50 percent.

Forage Crop	Management Intensity	
	High (lbs/ac)	Low (lbs/ac)
Alfalfa	9100	3900
Alfalfa/Intermediate wheatgrass	7700	3500
Alfalfa/smooth bromegrass	7700	3500
Big bluestem	6600	2900
Crested wheatgrass	6000	2600
Green needlegrass	4600	2000
Intermediate wheatgrass	6300	2800
Smooth bromegrass	6300	2800
Switchgrass	7700	3100
Western wheatgrass	4600	2000

Forage Growth Curves

Growth curves estimate the seasonal distribution of growth of the various forage crops. They indicate when the forages may be available for grazing or mechanical harvest.

Growth Curve Number: SD0001
Growth Curve Name: Alfalfa
Growth Curve Description: Alfalfa, MLRAs 107, 102B, 63B, 66, 65

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	30	25	20	15	5	0	0	0

Growth Curve Number: SD0004
Growth Curve Name: Cool season grass
Growth Curve Description: Cool season grass, statewide

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	0	0	0	10	40	30	10	5	5	0	0	0

Growth Curve Number: SD0005
Growth Curve Name: Warm season grass
Growth Curve Description: Warm season grass, statewide

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	10	40	35	15	0	0	0	0

Soil Limitations

These soils have few limitations to the production of climatically adapted forage crops. On steeper slopes, water erosion is a potential problem during establishment, when renovating stands, and in thin established stands. Livestock trail erosion is a potential problem in established stands.

Management Interpretations

Including sod forming grass species in stands, especially on steeper slopes, will reduce the potential for sheet and rill erosion. Incorporate erosion control practices during the establishment period. Properly locating facilitating practices such as fences, lanes, and water developments can help control livestock movement, reduce trailing perpendicular to steeper slopes, and evenly distribute grazing pressure.

FSG Documentation

Similar FSGs:

FSG ID	FSG Narrative
G055CY120S	Droughty Loam soils are shallower or coarser textured resulting in lower available water capacity and lower production potential.
G055CY500S	Overflow soils receive additional moisture due to a favorable landscape position resulting in a higher production potential.

Inventory Data References

Agriculture Handbook 296-Land Resource Regions and Major Land Resource Areas
Natural Resources Conservation Service (NRCS) National Water and Climate Center data
USDA Plant Hardiness Zone maps
National Soil Survey Information System (NASIS) for soil surveys in South Dakota counties in MLRA 55C
NRCS South Dakota Technical Guide
NRCS National Range and Pasture Handbook
Various Agricultural Research Service, Cooperative Extension Service, and NRCS research trials for plant adaptation and production.

State Correlation

This site has been correlated with the following states: South Dakota

Forage Suitability Group Approval

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Original Date: 2/4/02
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